

IN THE CLAIMS:

Please cancel claims 7, 10-14, 21, 36, 39-43, 50, 65, 68-72 and 79.

Rewrite the pending claims as follows:

1. (Currently Amended) A method of forming a visual plot from a dataset having a hierarchical structure, wherein said dataset comprises a measure attribute and a hierarchical dimension attribute, the dimension attribute comprising a plurality of levels that have a natural hierarchical order, the method comprising:
  - (A) constructing said visual plot based on a specification, wherein the specification defines a mapping from said dataset to said visual plot;
  - (B) querying said dataset to retrieve data in accordance with said specification, said retrieved data including corresponding to at least a ~~portion~~ subset of data associated with said dimension attribute and at least a ~~portion~~ subset of data associated with said measure attribute; and
  - (C) populating said visual plot with said retrieved data in accordance with said specification by associating a first level from said plurality of levels with a first axis of said visual plot and a second level from said plurality of levels with a second axis of said visual plot, wherein said first axis and said second axis ~~have different orientations~~ are oriented in different directions in a space occupied by said visual plot such that said first level and said second level are displayed independently from said natural hierarchical order.
2. (Original) The method of claim 1 wherein said dataset is a database.
3. (Original) The method of claim 2 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of tuples in accordance with said specification.
4. (Previously Presented) The method of claim 3 wherein said visual plot comprises a plurality of panes and said populating said visual plot with said retrieved data in accordance with said specification comprises associating at least a subset of said set of tuples with a pane in said plurality of panes.
5. (Previously Presented) The method of claim 4 further comprising encoding a tuple in said subset of tuples in said pane as a graphic.

6. (Original) The method of claim 1 wherein said specification is in a language based on the hierarchical structure of the dataset.
7. (Canceled)
8. (Previously Presented) The method of claim 1 wherein said first level corresponds to one or more rows of said visual plot and said second level corresponds to one or more columns of said visual plot.
9. (Original) The method of claim 8 wherein each row in said plurality of rows or each column in said plurality of column is assigned a different color or hash pattern.
- 10.-14. (Canceled)
15. (Previously Presented) The method of claim 1 wherein said plurality of levels represent the levels month, quarter, and year.
16. (Previously Presented) The method of claim 1 wherein  
multiple levels from said dimension attribute including said first level are represented by said first axis; and  
said multiple levels are represented on said first axis of said visual plot in an order that deviates from an order in said hierarchical dimension attribute.
17. (Original) The method of claim 1 wherein said retrieved data is represented in text form, as a bar chart, or as a scatterplot in said visual plot.
18. (Original) The method of claim 1 wherein said specification comprises an algebraic expression that includes an operand, wherein said algebraic expression represents an operation on said hierarchical structure of said dataset.
19. (Previously Presented) The method of claim 1 wherein  
said specification organizes said visual plot into a plurality of rows and a plurality of columns; and  
said specification comprises a first algebraic expression for said plurality of rows and a second algebraic expression for said plurality of columns, and wherein at least one of said first algebraic expression and said second algebraic expression represents an operation on said hierarchical structure of said dataset.

20. (Previously Presented) The method of claim 19 wherein  
said specification further organizes said visual plot into a plurality of layers;  
said specification further comprises a third algebraic expression for said plurality of  
layers; and  
said third algebraic expression represents an operation on said hierarchical structure  
of said dataset.
21. (Canceled)
22. (Previously Presented) The method of claim 1 wherein  
said first axis represents said first level of said hierarchical dimension attribute and  
said measure attribute such that said measure attribute is partitioned into a plurality of  
segments, each segment in said plurality of segments representing a data point in said first  
level.
23. (Previously Presented) The method of claim 22 wherein said dimension attribute is  
time.
24. (Previously Presented) The method of claim 22 wherein each data point in said first  
level represents a predetermined time period.
25. (Original) The method of claim 24 wherein said predetermined time period is one of  
a year, a quarter, a month, a week, a day, an hour, a minute, or a second.
26. (Previously Presented) The method of claim 22 wherein each segment in said  
plurality of segments is assigned a different color or a different hash pattern.
27. (Previously Presented) The method of claim 1 wherein  
said first axis represents a level of detail of a graphic, and  
said second axis represents said measure attribute.
28. (Previously Presented) The method of claim 27 wherein said graphic is partitioned  
into a plurality of segments in accordance with said level of detail such that each segment of  
said plurality of segments is assigned a different color or a different hash pattern and each  
segment of said plurality of segments represents a different data point in the second level of  
said hierarchical dimension attribute.

29. (Original) The method of claim 28 wherein said first level is year and said second component is month.

30. (Currently Amended) ~~A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein for forming a visual plot from a dataset having a hierarchical structure, wherein said dataset comprises a measure attribute and a hierarchical dimension attribute, the dimension attribute comprising a plurality of levels that have a natural hierarchical order, the computer program mechanism comprising instructions that are executed by a computer system to, if executed by the computer system, cause the computer system to:~~

(A) ~~construct said visual plot based on a specification, wherein the specification defines a mapping from said dataset to said visual plot;~~

(B) ~~query said dataset to retrieve data in accordance with said specification, said retrieved data including corresponding to at least a portion subset of data associated with said dimension attribute and at least a portion subset of data associated with said measure attribute; and~~

(C) ~~populate said visual plot with said retrieved data in accordance with said specification by associating a first level from said plurality of levels with a first axis of said visual plot and a second level from said plurality of levels with a second axis of said visual plot, wherein said first axis and said second axis have different orientations are oriented in different directions in a space occupied by said visual plot such that said first level and said second level are displayed independently from said natural hierarchical order.~~

31. (Currently Amended) ~~The computer program product~~ computer readable storage medium of claim 30 wherein said dataset is a database.

32. (Currently Amended) ~~The computer program product~~ computer readable storage medium of claim 31 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of tuples in accordance with said specification.

33. (Currently Amended) ~~The computer program product~~ computer readable storage medium of claim 32 wherein said visual plot comprises a plurality of panes and said populating said visual plot with said retrieved data in accordance with said specification

comprises associating at least a subset of said set of tuples with a pane in said plurality of panes.

34. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 33 further comprising instructions for encoding a tuple in said subset of tuples in said pane as a graphic.

35. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein said specification is in a language based on the hierarchical structure of the dataset.

36. (Canceled)

37. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein said first level corresponds to one or more rows of said visual plot and said second level corresponds to one or more columns of said visual plot.

38. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 37 wherein each row in said plurality of rows or each column in said plurality of column is assigned a different color or hash pattern.

39.-43. (Canceled)

44. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein said plurality of levels represent the levels month, quarter, and year.

45. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein

multiple levels from said dimension attribute including said first level are represented by said first axis; and

said multiple levels are represented on said first axis of said visual plot in an order that deviates from an order in said hierarchical dimension attribute.

46. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein said retrieved data is represented in text form, as a bar chart, or as a scatterplot in said visual plot.

47. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein said specification comprises an algebraic expression that includes an operand, wherein said algebraic expression represents an operation on said hierarchical structure of said dataset.

48. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein

said specification organizes said visual plot into a plurality of rows and a plurality of columns; and

said specification comprises a first algebraic expression for said plurality of rows and a second algebraic expression for said plurality of columns, wherein at least one of said first algebraic expression and said second algebraic expression represents an operation on said hierarchical structure of said dataset.

49. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 48 wherein

said specification further organizes said visual plot into a plurality of layers;

said specification further comprises a third algebraic expression for said plurality of layers; and

said third algebraic expression represents an operation on said hierarchical structure of said dataset.

50. (Canceled)

51. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein

said first axis represents said first level of said hierarchical dimension attribute and said measure attribute is partitioned into a plurality of segments, each segment in said plurality of segments representing a data point in said first level.

52. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim ~~[[50]]~~ 30 wherein said dimension is time.

53. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim ~~[[50]]~~ 51 wherein each data point in said first level represents a predetermined time period.

54. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 53 wherein said predetermined time period is one of a year, a quarter, a month, a week, a day, an hour, a minute, or a second.

55. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 51 wherein each segment in said plurality of segments is assigned a different color or a different hash pattern.

56. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 30 wherein  
said first axis represents a level of detail of a graphic,-and  
said second axis represents said measure attribute.

57. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 56 wherein said graphic is partitioned into a plurality of segments in accordance with said level of detail such that each segment of said plurality of segments is assigned a different color or a different hash pattern and each segment of said plurality of segments represents a different data point in the second level of said hierarchical dimension attribute.

58. (Currently Amended) The ~~computer program product~~ computer readable storage medium of claim 57 wherein said first level is year and said second component is month.

59. (Currently Amended) A computer system for forming a visual plot from a dataset having a hierarchical structure, wherein said dataset comprises a measure attribute and a hierarchical dimension attribute, the dimension attribute comprising a plurality of levels that have a natural hierarchical order, the computer system comprising:

a central processing unit;

memory, coupled to the central processing unit, the memory storing:

said dataset; and

a programming module comprising:

(A) instructions for constructing said visual plot based on a specification, wherein the specification defines a mapping from said dataset to said visual plot;

(B) instructions for querying said dataset to retrieve data in accordance with said specification, said retrieved data including ~~corresponding to~~ at least a ~~portion~~ subset of data

associated with said dimension attribute and at least a ~~portion~~ subset of data associated with said measure attribute; and

(C) instructions for populating said visual plot with said retrieved data in accordance with said specification by associating a first level from said plurality of levels with a first axis of said visual plot and a second level from said plurality of levels with a second axis of said visual plot, wherein said first axis and said second axis ~~have different orientations~~ are oriented in different directions in a space occupied by said visual plot such that said first level and said second level are displayed independently from said natural hierarchical order.

60. (Original) The computer system of claim 59 wherein said dataset is a database.

61. (Original) The computer system of claim 60 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of tuples in accordance with said specification.

62. (Previously Presented) The computer system of claim 61 wherein said visual plot comprises a plurality of panes and said populating said visual plot with said retrieved data in accordance with said specification comprises associating at least a subset of said set of tuples with a pane in said plurality of panes.

63. (Previously Presented) The computer system of claim 62 further comprising instructions for encoding a tuple in said subset of tuples in said pane as a graphic.

64. (Previously Presented) The computer system of claim 59 wherein said specification is in a language based on the hierarchical structure of the dataset.

65. (Canceled)

66. (Previously Presented) The computer system of claim 59 wherein said first level corresponds to one or more rows of said visual plot and said second level corresponds to one or more columns of said visual plot.

67. (Original) The computer system of claim 66 wherein each row in said plurality of rows or each column in said plurality of column is assigned a different color or hash pattern.

68.-72. (Canceled)



73. (Previously Presented) The computer system of claim 59 wherein said plurality of levels represent the levels month, quarter, and year.
74. (Previously Presented) The computer system of claim 59 wherein  
multiple levels from said dimension attribute including said first level are represented by said first axis; and  
said multiple levels are represented on said first axis of said visual plot in an order that deviates from an order in said hierarchical dimension attribute.
75. (Original) The computer system of claim 59 wherein said retrieved data is represented in text form, as a bar chart, or as a scatterplot in said visual plot.
76. (Original) The computer system of claim 59 wherein said specification comprises an algebraic expression that includes an operand, wherein said algebraic expression represents an operation on said hierarchical structure of said dataset.
77. (Previously Presented) The computer system of claim 59 wherein  
said specification organizes said visual plot into a plurality of rows and a plurality of columns; and  
said specification comprises a first algebraic expression for said plurality of rows and a second algebraic expression for said plurality of columns wherein at least one of said first algebraic expression and said second algebraic expression represents an operation on said hierarchical structure of said dataset.
78. (Previously Presented) The computer system of claim 77 wherein  
said specification further organizes said visual plot into a plurality of layers;  
said specification further comprises a third algebraic expression for said plurality of layers; and  
said third algebraic expression represents an operation on said hierarchical structure of said dataset.
79. (Canceled)
80. (Previously Presented) The computer system of claim 59 wherein  
said first axis represents said first level of said hierarchical dimension attribute and said measure attribute such that said measure attribute is partitioned into a plurality of

segments, each segment in said plurality of segments representing a data point in said first level.

81. (Previously Presented) The computer system of claim 80 wherein said dimension attribute is time.

82. (Previously Presented) The computer system of claim 80 wherein each data point in said first level represents a predetermined time period.

83. (Original) The computer system of claim 82 wherein said predetermined time period is one of a year, a quarter, a month, a week, a day, an hour, a minute, or a second.

84. (Previously Presented) The computer system of claim 80 wherein each segment in said plurality of segments is assigned a different color or a different hash pattern.

85. (Previously Presented) The computer system of claim 59 wherein  
said first axis represents a level of detail of a graphic, and  
said second axis represents said measure attribute.

86. (Previously Presented) The computer system of claim 85 wherein said graphic is partitioned into a plurality of segments in accordance with said level of detail such that each segment of said plurality of segments is assigned a different color or a different hash pattern and each segment of said plurality of segments represents a different data point in the second level of said hierarchical dimension attribute.

87. (Original) The computer system of claim 86 wherein said first level is year and said second component is month.

88. (Original) The method of claim 2 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of objects in accordance with said specification.

89. (Currently Amendment) The computer ~~program-product~~ readable storage medium of claim 30 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of objects in accordance with said specification.

90. (Original) The computer system of claim 59 wherein said querying said dataset to retrieve data in accordance with said specification comprises querying the database to retrieve a set of objects in accordance with said specification.